Modern and Clinico-Morfological Diagnosis of Breast Cancer

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Abstract: Data on the epidemiology of mastopathy and breast cancer, population risks of breast cancer, causes predisposing to mastopathy, and risk factors for breast cancer are presented .According to the literature, the process of "rejuvenation" of breast cancer over the past decades has seen an increase in this disease among women at a younger age under 40 years [1]. In addition, breast cancer in young women may have a worse prognosis and more aggressive biological behavior than breast cancer in elderly patients approx. Previous studies have shown that in young women, breast cancer is diagnosed at a later stage, characterized by high proliferative activity, low differentiated Oh, with estrogen receptor negative tumors, with the presence of asular invasion lymphs [7; 10]. Previously, the definition of "young women" included patients under 35 years of age, since 2015, the World Health Organization has developed a new age classification [12], according to which: persons under the age of 44 are young; 46-59 years old - to mature; 61-74 years old to the elderly; 75-90 years old - to the elderly. The threshold of longevity is considered to be the achievement of 90 years or more.

Keywords: radiation diagnostics, ultrasound, RMH, MRI, breast cancer, IHC.

Introduction. Breast cancer in the early stages (1st and 2nd) is asymptomatic and does not cause pain. There may be very painful menstruation, pain in the mammary glands with mastopathy. Usually breast cancer is detected before the obvious appearance of immediate symptoms of the tumor — either on a mammogram, or a woman feels the appearance of a seal in the breast. Radiographic indicators of breast cancer in young women may vary, and the diagnosis of cancer may be more complex than in older people, since there are also different histopathological features [2; 7]. Most medical associations, including the American College of Radiology and the Society for Breast Imaging, recommend annual breast cancer screening starting at the age of 40, young women have lower mammography sensitivity due to denser breast tissue [8; 9]. The use of breast ultrasound is preferred for women under the age of 40 in the diagnosis of breast diseases, but mammography or magnetic resonance imaging (MRI) should be performed if malignancy is suspected[10]. Thus, the aim of this study was to evaluate the clinical, visual and histopathological features of breast cancer in women under the age of 4 4 years. A secondary objective was to investigate the relationship between radiological characteristics and histopathological signs.

Materials and methods. Between January 2018 and December 2021, a retrospective study was conducted in 100 women who underwent biopsy and diagnosis verification. Patients with benign pathological findings would have been excluded from the study, so 60 patients diagnosed with breast cancer were included in the study. The median age was 39.2 ± 3.6 years. All patients underwent ultrasound, 40 patients had mammography, and only 27 patients had MRI. Patients aged >35 years with a family history of breast cancer underwent mammography as an initial method. For others, patients to first an ultrasound was used, and then a mammogram was performed due to suspicious results. MRI was applied to 27 patients to assess the extent of breast cancer prior to breast-sparing surgery. Ultrasound I- and images were obtained using a 1 5 MHz

linear sensor on a Toshiba Aplio 500 device (Toshiba Medical Systems Corporation, Japan, 2016). For mammograms, standard mediolateral oblique and craniocaudal images were obtained using Onis essential mammography systems (Amulet S , Fujifilm, Japan, 2016). MRI scans were obtained in the prone position, on a 3.0 Tesla MRI scanner (PLIPS, in T1 VI, T2 VI, 3D modes) using a four channel phased array chest coil. After preliminary contrasting of T1-weighted images at intervals, the following 5 axial T1-weighted post-contrast dynamic sequences were obtained in 1-5 minutes.

Results. Pathologic studies were performed to determine histopathological type, tumor extent and immunohistochemical findings, including estrogen receptor (RE), progesterone receptor (RP) and human epidermal growth factor receptor 2 (Her 2/neu). Her2/neu status was defined as positive for tumors with a score of +3 and negative for tumors with scores of 0 and +1. A negative result for all three hormone receptors was defined as triple-negative breast cancer. The results of the study onlinear and histopathological features are presented in Table No.1.

Table 1. Clinical and histopathological features in examined patients with breast cancer

Characteristics	Number of patients, n=60 (%)	(%)
Clinical characteristics		
We palpatethe formation	37	61.7
Breast cancer on the maternal side	9	15.0
Bone metastasis	1	1.7
Histopathological type		
Invasive ductal cancer	48	80
Invasive - doljkovy cancer	8	13.4
Medullary cancer	2	3.3
Mucous carcinoma	2	3.3
Degree of differentiation		
G1	4	6.7
G2	12	23.3
G3	42	70.0
Immunohistochemical results		
RE positivity	19	31.7
RP positivity	23	38.3
Her 2/neu позитивность	34	56.7
Threetimes negative	13	21.7

Most breast cancer was detected by clinical symptoms, especially with palpable mass (37/60; 61,7%). The rest of the patients were asymptomatic and diagnosed with breast cancer when they underwent breast ultrasound due to a family history of breast cancer. The most common histological type of tumor was invasive - ductal carcinoma, 42 (70.0%) tumors were of a poorly differentiated degree, and 13 women (21 ,6%) the tumor Andy were triple negative.

Ultrasonography was performed in all patients. In 5 (8.3%) patients, no abnormalities were shown in ultrasound and these cases were diagnosed with micro calcium on mammograms. The predominant features on ultrasound I were irregular shape (49/81.7%), contours unevene (47/78.3%) and hypoechoicgene structure (45/75.0%) (Table 2).

Table 2. Results of sonography in examined patients

Ultrasound – signs	Number of patients n=60	%
Form		
Shaft-rounded	11	18.3
Wrong	49	81.7
Toontura		

Clear and clear	13	21.7
On the other hand,	47	78.3
Additional signs		
acoustic shadow from the back wall	36	60
Dorsal amplification	15	25
Echogenicity		
isoechoic	4	6.7
hypoechoic	45	75.0
hyperechoic	11	18.3

The majority of current patients (36/60.0%) showed an acoustic shadow from the posterior wall, and 15 (25%) patients had dorsal amplification.

X-ray mammography. Mammography was performed in 40 patients (66.7%), and an anomaly was detected on 37 (84.1%) of these images. The most common pathology in mammography was the presence of mass (34/40, 85.0%). In 5 (12.5%) patients, the diagnosis was established on the basis of the presence of pleomorphic micro calcium nates only on mammography (Tab. №3).

Table 3. Results of mammography in examined patients

X-ray signs	Number of patients, n=40	%
Abouteducation	34	85,0
inparticles of asymmetric density	3	7,5
pleomorphнɪх microкальцинатеоv	5	12,5
Form		
oShaft-rounded	7	17,5
Wrong	33	82,5
Contours		
Clear and clear	6	15,0
On the other hand	25	62,5
withpiculoids	9	22,5

The most common shape on mammograms was incorrect, and the most common shape of the contours was uneven, less spicy about the spicy.

MR mammography In all patients, the results of ultrasound and mammography were used in the diagnosis. MRI was performed in 27 (45.0%) patients in the preoperative period to assess the degree of breast cancer. Of the 27 cases, 18 (66.7%) had a lesion, and 9 (33.3%) had the form of area of asymmetric density. Most patients showed a dynamic curve of type 2 or 3 (8/29.6% and 19/70.4%).

Table 4. Results of MR mammography in examined patients

MR – signs	Number of patients, n=27	%
Education	18	66,7
District	9	33,3
Graphical dependence of the change in signal intensity on formations		
Type II	8	29,6
Type III	19	70,4
Intensity at T2 VI		
isointensive;	16	59,3

| Hypointense | 2 | 7.4 |
| Hyperintense | 9 | 33,3 |

The intensity of the T2 VI signal was predominantly is intensive in16 (59.3%) women, in 9 of 27 (33.3%) patients, breast cancer was predominantly hyper intense, and in 2 (7.4%) cases it was hypointense. Association between histopathological signs and imaging findings G3 tumors were associated with dorsal enhancement (G 1–2 - 10.9% and G 3-28.2% p = 0.03). O Tumors of poorly differentiated grade (G3) are more pronounced with spicule-like contours than tumors of highly differentiated degree (G 1 –2 - 11.8%, G3 - 26.1%, p = 0.04). G3 tumors showed greater intrinsic heterogeneity and hypo echogenicity. 2.) than tumors G 1–2 (G 1–2 - 8.7% and 10.9% / G3 - 16.5% and 28.2%; p = 0.09 and p = 0.03). Histopathological evaluation showed no association with radiographic findings, including shape, contours, and micro calcifications. All cases with the accumulation of micro calcifications occurred at G3 degrees of breast cancer. There was no statistically significant association between immunohis to chemical data and imaging data. In MR mammography of T 1 VI images, isointensity was more often observed in grade G 3 tumors than in G 1-2 tumors (G 1-2-14.3%, G 3-40%, p = 0.3) (Figure 1). Thickening of the skin (G 1-2-13% and G 3-21.2%, p = 0.3) and the presence of axillary lymphadenopathy (G 1-2- 50% and G 3-65.9%, p = 0.1) were more often observed in poorly differentiated tumors than in tumors There is a high degree of differentiation, but these results were not statistically significant or significant.

Discussion. In the study, the majority of cases of breast cancer in women under the age of 4-4 years were established symptomatically, especially with palpable mass, and more than half of the patients had axillary lymphadenopathy on ultrasound at the time of diagnosis. The reason for the poor prognosis may be late diagnosis and axillary or distant metastases in diagnosis. 9.14 According to An Y. Y., the results of the study showed that breast cancer in women under the age of 40 years was associated with a higher histological assessment [2]. Radiation diagnosis of breast cancer in young women is a more difficult task compared to the older age group of patients. Most medical associations recommend annual breast cancer screening for women in their 40s with an average risk. Mammography is currently the main method of screening breast cancer [6; 17]. However, breast cancer can hide breast cancer, and therefore the sensitivity of mammography in young women decreases due to the higher density of breast tissue [17]. Due to the higher density and over diagnosis in young women, ultrasound can also be considered basic method of diagnosing breast cancer. In this study, ultrasonography was performed for all age groups of women. Of the patients who underwent mammography, breast cancer was found in 84.1%. In addition, 5 patients who could not be diagnosed by ultrasound were diagnosed by mammography. On mammography, the most common findings of tumors were pleomorphic-type mic rocalcinates and mass. The form of education was usually incorrect, which corresponded to the results of previous studies [2; 4] The predominant marginal signs were ultrasound with irregular and darkening on mammography. In contrast to the current study, Bullier et al. found a predominance of spicule like ontures in women with breast cancer at the age of dynamic curves were of 2 or 3 types, similar to the results of previous studies [2; 3; 19]. Dynamic curves of type 2 (plateau) and 3 (leaching), In particular, they can help the radiologist in diagnosing breast cancer in young women. The relationship between imaging findings and the histological level was also investigated. Tumors of a highly differentiated degree were associated with posterior acoustic amplification, whereas tumors of a low-grade grade were associated with a spicule-shaped ontur. In addition, in MR mammography T2VI images Isolation was more common in high-grade tumors than in low-grade tumors, but these data could not achieve statistical significance, probably due to the small number of patients with MRI data. The results of previous studies confirmed the results of the present study, and it was reported that high-grade and triple negative tumors can mimic benign lesions with a smooth contour and rear reinforcement [1, 3;18]. It is known that high grade tumors exhibit higher cellularity and necrosis, which may be due to other internal heterogeneity and iso-intensityT2 VI images.

However, tumors of a low grade usually show a higher stromal response and desmoplasia, which can cause spicule-like onturas [5;1 1;16]. Thus, due to different imaging results, breast cancers under the age of 4-4 years may show excellent radiological results from their older counterparts. There were some limitations of the current study. The main limitation was retrospective analysis. Secondly, the number of patients assessed by MRI was small, and this may be the reason for the lack of statistical significance. Finally, although immunohistochemical molecular subtypes have been studied, they could not be estimated due to the lack of Ki67 data in some patients. In conclusion, it should be noted that breast cancer in women under 4 years of age is usually characterized by the presence of a palpable mass and may exhibit a variety of imaging results, including an acoustic shadow from the posterior wall on ultrasound, isointensity of T1 VI and hyper intensity of T2 VI images, and spicule-like to ontura due to lower differentiated histological degree. In the world, ultrasound is the main method for diagnosing breast cancer in young women, but mammography and MRI can help in both diagnosing and assessing the extent of the disease. Awareness of imaging and clinical and pathological data on breast cancer in young women helps doctors make an early and accurate diagnosis, and the mammologist to provide the right treatment.

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